REMARKS

Claims 1-42 remain in the application. Claims 1, 2, 3, 4, 5, and 25 are hereby amended. No new matter is being added.

Claim Rejections--35 USC 102

Claims 1-42 were rejected under 35 USC 102 as being anticipated by Yamaguchi. Applicants respectfully traverse this rejection with respect to the claims as now amended.

Independent claims 1-4 and dependents

Amended claim 4 now recites as follows.

4. A method of processing all or a portion of a multi-dimensional signal with a domain composed of a collection of arbitrarily shaped domains via a multi-scale transform comprising the steps of:

a. Obtaining a multi-dimensional digital image frame;
b. Breaking the image frame into constituent arbitrary shaped domains, or given such a set, that cover all or a portion of the original multi-dimensional signal domain;
c. Performing the domain adaptive transform, **wherein the domain adaptive transform comprises a transform in which a filter comprising a convolution operator is applied to process pixels near a boundary of the domain but is not applied to process pixels in an interior of the domain**;
d. Quantizing the resultant decomposition coefficients; and
e. Encoding and transmitting the quantized values over an information

channel to a decoder for reconstruction of an approximated signal.

(Emphasis added.)

As shown above, amended claim 4 is now limited such that it requires "**Performing the domain adaptive transform, wherein the domain adaptive transform comprises a transform in which a filter comprising a convolution operator is applied to process pixels near a boundary of the domain but is not applied to process pixels in an interior of the domain**." (Emphasis added.)

This limitation is discussed, for example, in the paragraph starting at the bottom of page 24 in the specification and FIGS. 15A, 15B and 15C, which are reproduced below for convenience of reference.

> **The current embodiment of the invention relates to how a transform will employ alternative rules when approaching a boundary, i.e. domain adaptive transform.** An example of this is shown in Fig. 16A-I. Here **Fig. 16A displays a point denoted as 1602 with a 5x5 neighborhood labeled according to the same scheme shown in Fig. 15B.** The image values for the pixels of interest are displayed in Fig. 16B. **It is this data which is to be processed by application of an example filter depicted in Fig. 16C. Here, once again, a filter is defined as a convolution operator that results in a weighted sum of values contained in the target signal.**
>
> (Emphasis added.)

Applicants respectfully submit that the above-discussed claim limitation of "**Performing the domain adaptive transform, wherein the domain adaptive transform comprises a transform in which a filter comprising a convolution operator is applied to process pixels near a boundary of the domain but is not applied to process pixels in an interior of the domain**" (emphasis added) is not taught by the Yamaguchi reference.

Therefore, applicants respectfully submit that claim 4, as now amended, now overcomes this rejection.

Similarly, independent claims 1, 2, and 3 are now also amended so as to recite the limitation of "**Performing the domain adaptive transform, wherein the domain adaptive transform comprises a transform in which a filter comprising a convolution operator is applied to process pixels near a boundary of the domain but is not applied to process pixels in an interior of the domain**". (Emphasis added.) Therefore, applicants respectfully submit that amended claims 1-3 now also overcome this rejection.

Claims 6-10 and 15-40 depend from one or more of independent claims 1-4. Therefore, applicants respectfully submit that claims 6-10 and 15-40 now also overcome this rejection for at least the reasons discussed above in relation to claims 1-4.

Independent claim 5

Independent claim 5 is now amended so as to include the limitation of "Performing a pattern adaptive transform on the signal, **wherein the pattern adaptive transform comprises an interpolation filter that adapts to different patterns present in the multi-dimensional signal**". (Emphasis added.)

This limitation is discussed, for example, in the paragraph starting at the bottom of page 30 in the specification and FIGS. 17A, 17B and 17C, which are reproduced below for convenience of reference.

> A pattern adaptive transform is a transform that adapts itself to the patterns inherently present in the data the transform being applied to. In particular, one embodiment of multi-scale pattern adaptive transforms will be described here. As was mentioned earlier, in a multi-scale pyramidal transform, the forward transform build coarser and coarser averages of the image data are produced. On the inverse transform, the coarser parent data are used to predict the data on the finer(child) scale. The data is not interpolated with constant filter coefficients, rather the coefficients are scaled in the data dependent way. **The interpolation filter thus adapts itself to the pattern of the data.** Specifically in the current embodiment, a 4x4 set of parents is chosen for interpolating the child grid. Each point initially has a fixed coefficient of a 4x4 filter associated with it. The approximate gradient value to each of the 16 parent values from the center is then computed. Each of the filter coefficients is then scaled by the inverse of the gradient value. The new filter is re-normalized and then applied to interpolate the data. In Fig. 17A, an example of a "diagonal trough". The low lying line of the "trough" going from lower left to upper right are the low points emphasized in gray. In case of the "trough", the gradient values along the trough are small, while in the direction perpendicular to the trough are high. Thus the point in the middle will interpolated primarily along the "equipotential" lines roughly parallel to die "trough", with the weight of the other points being quite small. The "trough" can also have a bend as illustrated by Fig. 17B. Here, the low lying line of the "trough" is again emphasized in gray, but it is no longer straight. The interpolation will still happen along the "equipotential" lines, this time approximately following the curve of the "trough". Fig 17C contains a "slanted surface". For the slanted surface, the low lying line of the trough is again emphasized in gray, here going from bottom left to top left. Again, the interpolation will happen mainly along the constant contour lines (up/down in this case) of the slanted surface. Note that no edge detection needs to be performed.

(Emphasis added.)

Applicants respectfully submit that the above-discussed claim limitation of "Performing a pattern adaptive transform on the signal, **wherein the pattern adaptive transform comprises an interpolation filter that adapts to different patterns present in the multi-dimensional signal**" (emphasis added) is <u>not</u> taught by the Yamaguchi reference.

Therefore, applicants respectfully submit that claim 5, as now amended, now overcomes this rejection.

Claims dependent on either claim 1 or 5

Claims 11-14 depend on either claim 1 (relating to domain adaptive transforms) or claim 5 (relating to pattern adaptive transforms). Applicants respectfully submit that these claims also overcome this rejection for at least the same reasons discussed above in relation to claims 1 and 5.

Conclusion

For the above discussed reasons, applicants respectfully submit that claims 1-42, as now amended, now overcome the rejections in the latest office action.

The Examiner is invited to call the undersigned for any questions. Favorable action is respectfully solicited.

Respectfully submitted,

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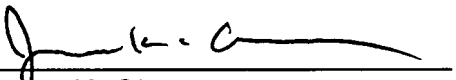
Dated: June 4, 2007 By: 

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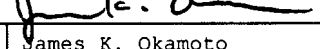
Signature:			
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